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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,137	09/18/2006	Hikaru Okubo	033036.110	6494
25461 7590 07/10/2009 SMITH, GAMBRELL & RUSSELL SUITE 3100, PROMENADE II 1230 PEACHTREE STREET, N.E. ATLANTA, GA 30309-3592				
EXAMINER				
FINK, BRIEANN R				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/593,137

Applicant(s)

OKUBO ET AL.

Examiner

Briann R. Fink

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 1-13, 15-22 and 26-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)
- Paper No(s)/Mail Date 9/18/06
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1-13 and 33-41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and claims 15-22 and 26-41 are withdrawn from further consideration as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 1, 2009.
2. Claims 14 and 23-25 are pending and under examination.
3. Note claims 14 and 23 depend on non-elected claim 1 and should be written in independent form.

Claim Objections

4. Claim 14 and 23 are objected to because of the following informalities:

Claims 14 and 23 depend on claim 1, which is a nonelected claim.

Therefore, claims 14 and 23 should be written in independent form where necessary so that they no longer depend on a nonelected claim.

Claim 14 recites substituent R^2 as being $-C_2H_2-$ or $-C_3H_4-$, which is currently presented in claim 1. These appear to be unsaturated functional groups; however, for clarification purposes they could be written more clearly, such as the following: $-CH=CH-$ or $-CH=CH-CH_2-$.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 14 and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by *Uchida et al.* (JP 04-159315). However, for convenience, the Derwent Abstract will be cited below (Derwent Acc. No. 1992-231959).

Uchida et al. discloses a composition having heat resistance and adhesion that are useful for electronics comprising allyl oligomers and a polyfunctional maleimide, having the general formula as shown on page 117 of the Japanese document. The allyl oligomers can have structure of formula (I) which is $\text{CH}_2=\text{CHCH}_2\text{O}(\text{CORCOOBO})_n\text{CORCOOCH}_2\text{CH}=\text{CH}_2$, where R is an organic residue of any divalent saturated carboxylic acid and B is an organic group derived from any divalent saturated alcohol.

A partial oral translation was able to determine R to be a residue of, for example, butyric acid (where R¹² of the instant invention would be 3 carbons), adipic acid (4 carbons), sebacic acid (8 carbons), azelaic acid (7 carbons), and cyclohexane dicarboxylic acid (6 carbons), which all fall within the requirement of a hydrocarbon of 2-8 carbons as required by instant claim 23, as well as a few aromatic acids. As for B, it was determined to be a residue of, for example, propylene glycol (where R¹³ of the instant invention would be 3 carbons),

propane diol (3 carbons) and butane diol (4 carbons), which all fall within the requirement of a hydrocarbon of 3 to 6 carbons as required by instant claim 25. See page 116.

Uchida et al. also discloses using peroxides as the initiator and curing the composition as elevated temperatures.

As for the required filler, a partial oral translation was able to determine that indeed the resin is used as resins containing glass and carbon fibers, which are commonly known in the art as typical fillers. See page 120.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Uchida et al.* (JP 04-159315). However, for convenience, the Derwent Abstract will be cited below (Derwent Acc. No. 1992-231959).

Uchida et al. anticipates instant claims 24 and 25 as described above and applied here as such, because *Uchida et al.* discloses some of the proper residues of R and B in order to meet the compounds of the instant invention by choosing two non-aromatic residues.

In the chance that one of ordinary skill in the art would not find it anticipated, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen any combination of R and B, including that of two non-aromatic residues.

9. Claims 14 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dershem et al.* (US 6,034,194).

Dershem et al. discloses an adhesive composition for attaching semiconductor devices to carrier substrates (col. 1, ll. 4-7). *Dershem et al.* discloses the adhesive composition to comprise a bismaleimide, a divinyl compound, a coupling agent, and a free radical initiator (col. 1, ll. 55-66). The bismaleimides comprise a bridging group of the following: -Ar-COO-Z-COO-Ar-, where Ar is an aromatic hydrocarbon and Z is an alkylene group or a polyalkylene oxide group (col. 2, ll. 5 and 25-35 and 45-50). The divinyl compounds meet compound (G) of the instant invention when R is H, Q not present at all (0) and -Y- is $-(CR_2)_t-O-CO-Ar-CO-O-(CR_1)_u]_{1,2}-$, R_2 and R_1 are H and t and u are 1, which is known in the art as an allyl ester. *Dershem et al.* further discloses that the free radical initiators initiated by increased temperatures such as peroxides (col. 5, ll. 46-60). The addition of fillers is also disclosed, such as electrically or thermally conductive fillers (col. 6, ll. 10-24).

Although *Dershem et al.* fails to specifically mention the allyl esters, as described above, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to have chosen the simplest of esters suggested by *Dershem et al.*

10. Claims 14 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dershem et al.* (US 6,034,195).

Dershem et al. discloses an adhesive composition comprising a maleimide and a vinyl compound, the maleimides comprising a functional group of the following: $Z-[O-CO-Ar]-$, where Ar is an aromatic hydrocarbon and Z is an alkylene group or a polyalkylene oxide group (col. 3, ll. 1-35) and the vinyl compounds have a formula of $Y-[-Q_{0,1}-CR=CHR]_q$. The vinyl compounds meet compound (G) of the instant invention when R is H, Q not present at all (0) and -Y- is $Ar-[-CO-O-(CR_2)_t]-$, R is H, t is 1, and Ar is an aromatic hydrocarbon, which is known in the art as an allyl ester. *Dershem et al.* further discloses that the free radical initiators initiated by increased temperatures such as peroxides (col. 8, ll. 46-60). The addition of fillers is also disclosed, such as electrically or thermally conductive fillers (col. 9, ll. 62-67).

Although *Dershem et al.* fails to specifically mention the allyl esters, as described above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen the simplest of esters suggested by *Dershem et al.*

Conclusion

11. As to the International Search Report (ISR):

- a. US 6,034,195 does not anticipate instant claim 25 because the vinyl compound requires an aromatic group when it is an ester.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Briann R. Fink whose telephone number is (571)270-7344. The examiner can normally be reached on Monday through Friday, 7:00 AM to 4:30 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/B. R. F./
Examiner, Art Unit 1796

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796